APPENDIX 4

Former Bayer CropScience site Hauxton Comments on proposed remedial strategies

A few key points taken from the Atkins 2006 documents:

* It is **important** to redefine the conceptual model.

* Groundwater flow from the site is to the brook and the river.

* Contaminants include **metals**, pesticides, herbicides, PAHs, TPH, chlorinated and non chlorinated hydrocarbons (solvents).

* There is **asbestos** to remove from the site.

* Need to consider the nature of NAPLs (Non Aqueous Phase Liquids) in the groundwater. (DNAPL (ie dense) were recorded in volumes below the groundwater by Atkins)

* Atkins report, Asignificant volumes of **free phase contaminants**@. (This means pure contamination, not a few ppm in the groundwater)

* They make clear that their Stage 3 is, Ain development@. That is described as:

How in broad terms the remediation strategy is to be implemented, and

Whether the remediation strategy will meet all of the site specific objectives.

* They are concerned about the possible remobilisation of contaminants when work commences. (This is probably what has happened causing pollution of the brook)

* They say the importation of material (capping) will provide an opportunity to mitigate some of the pollutant linkages. (What capping, how much, design criteria?)

* The complex suite of contaminants means that it is unlikely any one approach will work.

The Remediation Method Statement Revision 5 – November 2008

1. Say it is clear there is no contamination at present impacting on the Riddy Brook. (We know this to be untrue)

2. State, Asignificant contamination is present at the site@, and talk of, Ahighly contaminated soils and waters@.

3. Claim a, *Conceptual Site Model*, a, *Human Health Risk Assessment*, and a, *Groundwater Risk Assessment*, have all been submitted by Atkins, and, Aapproved by the regulators[@].

(They haven't – they were all preliminary)

4. Say the site is in a, Ademolished state@, and Asbestos has been removed. (If this is so it has been done without planning permission or controls)

5. The waste water treatment plant (WWTP) site is not going to remediated*, instead it will be enlarged to form an new and improved groundwater remediation plant. This site is Acontrolled@ by Harrow Estates*.

(In my view the new plant should be subject to detailed approval for an extended hazardous waste treatment works as it may have an impact in itself. It also needs to be remediated under Part IIA *Special Site* status)

6. They say they are going to apply >BATNEEC= - ie Best Available Techniques Not Entailing Excessive Costs. (This regulatory philosophy does not apply to this type of process. I would suggest that it has been wrongly introduced to try to justify cost cutting)

7. They say their aim is to remove all uncertainty relating to soils and groundwater within the site area

(There is no suggestion they will consider anything that has already escaped beyond the site boundary)

8. Broadly their remediation strategy is based on:

a) Pumping water out and settling it in large lagoons on the main site;

b) Then sending it to the WWTP for treatment;

c) Digging up the soil and putting it in heaps relying on sun light, bacteria and fungus to fix it. It will have to be turned regularly raising dust and fumes;

d) Taking some waste away to landfill;

e) Capping the site;

f) The materials to be remediated will be classified on a, *scratch and sniff*, basis ie Avisual and olfactory@;

^{*} When I asked the Environment Agency whom the, *Appropriate Persons*, were for the purposes of Part IIA (ie those responsible for the remediation of the site), they said it was Bayer CropScience (date of letter 30/07/07). That being the case that company have to submit a formal Remediation Statement under Part IIA. Bayer are never mentioned in these documents. One of the aims of companies in these situations is

to try to blur the lines of responsibility. Who will be responsible if anything goes wrong here? 9. The >bio= side will be enhanced by adding some nutrients (like manure) and air. Some of the fumes that come off will be treated in a filter where they can do this inside a building (main area 1 only). This means VOCs and other malodorous fumes and particulates will be liberated into the air at all other times.

10. They admit that some of the material will be non-biodegradeable and will have to do something else to deal with this. (Supplement with oxidising agent suggested)

11. They admit that some of the waste will be so toxic it will Aknock out@ the carbon filters and the bio treatment.

12. They suggest treatment in bio-piles may only take 4 weeks in some case with the pile turned only once.

13. No engineered cap design has been proposed.

14. They do not consider the problems with DNAPLs settling out in the lagoons contaminating the silts which will have to be subsequently treated or disposed of.

15. The treatment is described as, >typical=, ie not necessarily what they are going to do.

16. They admit the clayey soil will be difficult to deal with because things like air etc don=t move about freely within the matrix.

17. They admit they haven=t got sufficient data on which to devise a strategy:

The table (details of typical treatment) provide a general guide. It should be noted that all zones and soils will be assessed on an individual basis during the works.

18. They admit that what they propose won=t work:

It is the intention to work towards (Atkins=) targets - however it is likely that many are beyond the capability of treatment technologies.

19. The wording is key here, they say, Atreatment technologies@, suggesting all, not, *these* treatment technologies, which would be more appropriate.

However, for the avoidance of doubt we do not believe these targets are achievable through the use of readily available and <u>commercially viable</u> remediation technologies or without significant export of contaminated materials off site.

20. They say that they will be excavating around 250,000 m³ of material. If my calculations are correct that is an area of 62,500 m² to a depth of 4m, or 6.25 hectares or 15.44 acres. That is a **massive** undertaking even without extensive contamination and remedial treatment.

21. This must involve storage of these contaminated wastes in enormous volumes on the flood plain.

22. They say that the groundwater will be discharged under the existing discharge consent, which is in the name of Bayer.

23. They want to move the goal posts, ie develop new lower targets to the ones Atkins have produced:

An important part of the approach will be to collect further information It is our intention that this information will be used to further develop the site model to re-evaluate the remediation targets.

It does mean that some material will be replaced at the site that does not meet the present generic criteria

24. The table at 6.7 talks about >inner= and >outer= zones, it is not clear what these are.

25. They say that they will sample at a rate of 1 sample per 90 m³ of waste material to comply with planning conditions. Their true sampling rate will be 1 sample per 500 m³. That is about 1kg of sample per 50 twenty tonne lorries (say 1000 tonnes), or 0.000001% sample rate.

26. They are going to have a boot wash for personnel walking off site, but they claim a wheel wash for the filthy muddy lorries will not be necessary despite admitting materials will have to go off site.

27. They are going to check the Bentonite cut-off wall at the end of the programme. Its efficacy should have been fully evaluated as part of the EIA well before now as it is crucial to protect the adjoining water courses during the works.

28. One of the biggest risks is that of flooding. Once all the concrete is up all the contamination in the ground is exposed to the elements, including torrential rain. If this occurred (very possible in the UK I would suggest) it could send thousands of gallons of contaminated water into the Brook / River. This matter has not been adequately considered.

29. They admit floating free phase product will have to be dealt with using skimmers.

30. There is **no emergency plan**. Risks from flooding and fire in particular should be evaluated and prepared for with the Emergency Planning Unit of the County Council and the emergency services.

31. There is no mention of NAPLs, most significantly DNAPLs, which are the biggest problem on this site.

32. There is no suggestion that existing underground structures may contain hazardous chemicals. They should have been investigated at the SI stage using geophysical techniques (ground radar etc) to locate them all and identify their contents.

33. There is a suggestion that some underground structures may cross the site boundary. If they do it is essential to know exactly where and how their removal may impact on adjoining water courses and lands.

Roger Braithwaite 26th January 2009

01926 62 49 66